Office of Naval Intelligence

Modeling and Simulation in Intelligence Analytic Methodology

ONI Modeling & Simulation

Entering an era of transformation and revitalization

- Modeling, Simulation & Analysis (MS&A) has become a standard, core analytic methodology in industry, academia, and throughout DoD.
- ONI's customers increasingly demand threat intel in the form of models and/or M&S-ready/M&S-derived data.
- ONI has DoD-directed responsibility to validate all foreign maritime models in Navy/DoD use.

M&S: must become a standard, core process/ product in ONI scientific & technical and general military intelligence support (S&TI/GMI)

DoD Transformation

Department of Defense
DIRECTIVE

NUMBER 8260.1
December 6, 2002

SUBJECT: Data Collection, Development, and Management in Support of Strategic Analysis

References: (a) Defense Planning Guidance, "Fiscal Years 2004-2009," May 2002
(b) DoD 8910.1-M, "DoD Procedures for Management of Information Requirements," June 30, 1998

1. PURPOSE

DEPARTMENT OF THE NAVY

SECNAVINST 5200.40
19 April 1999

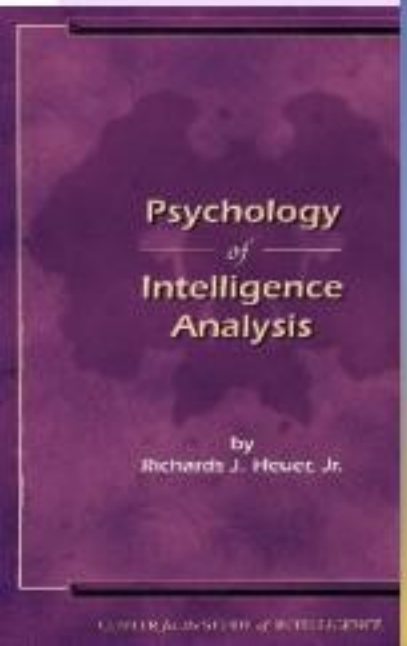
SECNAV INSTRUCTION 5200.40

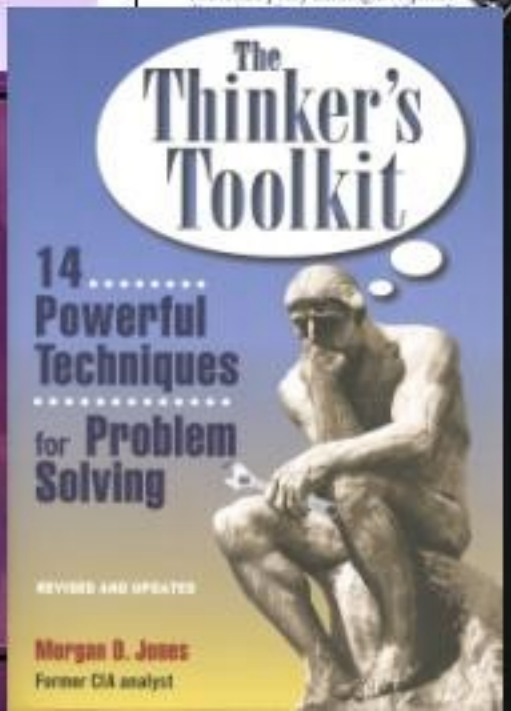
From: Secretary of the Navy

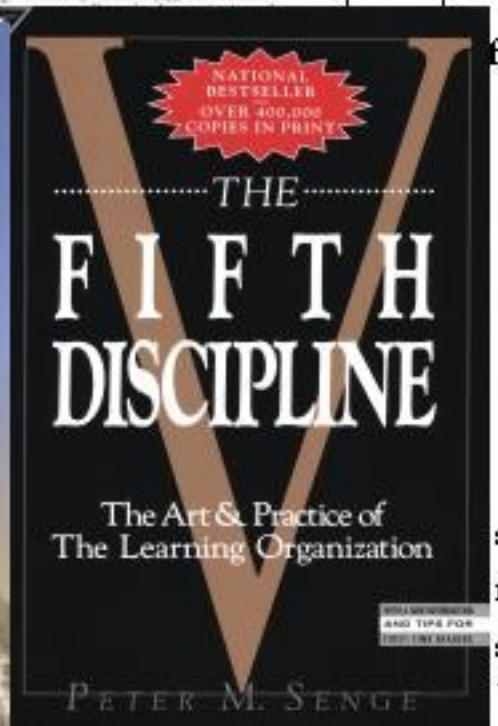
Subj: VERIFICATION, VALIDATION, AND ACCREDITATION (VV&A) OF MODELS AND SIMULATIONS

Encl: (1) VV&A Process
(2) Definitions

Ref: (a) DoD Directive 5000.59 of 4 Jan 94; Subj: DoD Modeling and Simulation (M&S) Management (NOTAL)
(b) DoD Directive 5000.61 of 29 Apr 96; Subj: DoD







Strategic Plan
for the Transformation of ONI
General Military Intelligence
(GMI)
Assessment, Production and
Training (AP&T)

FY 2004–2009

- Strategy
- Plan of Action and Milestones (POA&M)
- Statements of Work (SoWs) for External Assistance

ONI MS&A Vision

Mission: Production of Data, Models and Assessments

Vision: Transformation of Process and Product:

- *Transforming Analytic and Production Methodology*
- *M&S as Process; Data & Models as Product:*
  - **Process: modernize intelligence analysis/production through the systematic adoption of mathematical-scientific methodology:**
    - **M&S, and**
    - **Operations Research (OR);**
  - **Production/Product:**
    - **M&S-ready/M&S-derived data;**
    - **Models**: *Dynamic, Interactive Threat Assessments;*
    - **model validation; and**
    - **intelligence assessments for DoD/Navy customers.**

Create capability for credible anticipatory estimates & projections for current and futures intelligence

ONI MS&A Disciplines

S&TI:

- Platforms: ships/subs/aircraft;
- Systems: C4ISR; weapons;

GMI:

- Support to global & theater operations & tactics planning and doctrine development:
  - Foreign national capabilities/intentions;
  - Theater strategy, operations & tactics;
  - Campaign and engagement-level models/scenarios.

Objective: Support OSD/JCS, OPNAV, Fleet

MS&A Programs

GMI (ONI-2/22/23/24):

- Transformation of Assessment Methodology, Functionality and Training (AMF&T; ONI-2);
- GMI MS&A (ONI-22/23/24);
- M&S Data & Validation (ONI-22/23/24);

S&TI (ONI-23):

- Modeling and Simulation Analysis (MSA);
- Threat Modeling & Analysis Program TMAP);
- Integrated Denial and Deception Materials and Signatures (IDMATS), &
- Joint Dynamic Information Operations Decision Environment (J-DIODE).

Analytic Transformation

Assessment Methodology, Functionality and Training (AMF&T):

- Responds to SecDef/USD(I) command intent/guidance;
- Implements modern cognitive psychology & organizational development & learning;
- Overarching umbrella/context for ONI MS&A:
  - » Capabilities-based requirements process for ONI GMI MS&A
  - » Provides SOPs, tools & training.

Introduces scientific methodology into GMI

GMI MS&A

Implements AMF&T through:

- **Mathematical Modeling:**
  - Explication of assumptions/heuristics/biases;
  - Quantification of cause/effect;
- **Simulation Experimentation:**
  - Virtual Lab (CTASC);
  - Manipulation of variables;
  - Tests hypotheses about capabilities and intentions;

– Campaign/Mission-Level M&S:

- **FY03:** ITEM/GCAM/COSMOS (ER&A);
- **FY04-05:** NSS (in-house – CTASC);
- **FY05(+):** JWARS (CTASC).

SEATASK

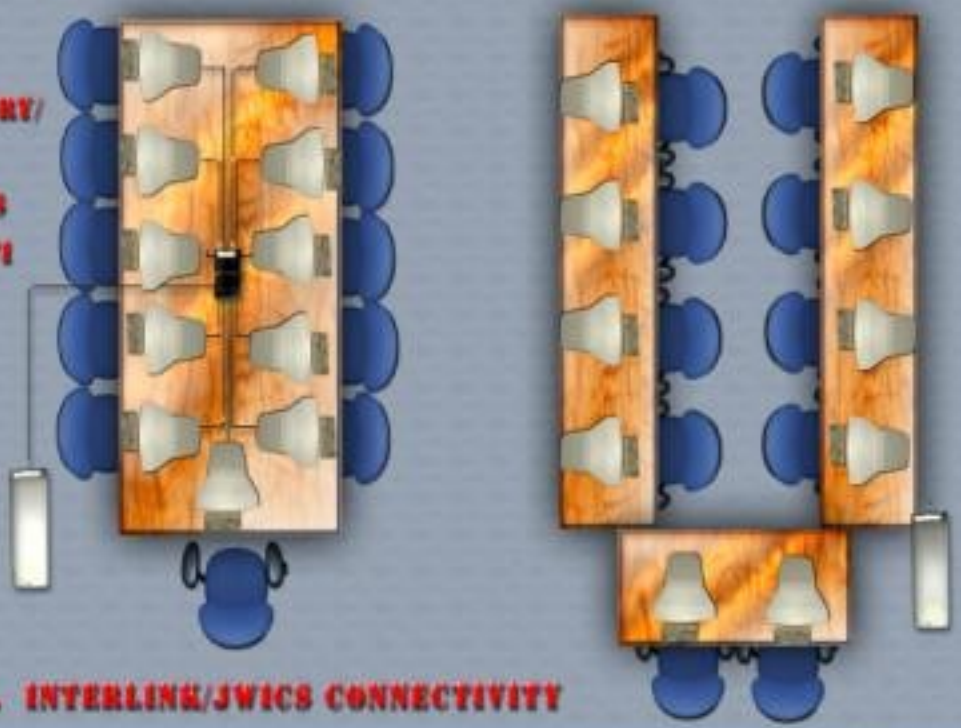
COLLABORATIVE TRAINING, ASSESSMENT & SIMULATION CENTER (CTASC)

COLLABORATION:

1. TRITON DIGITAL PRODUCTION TOOL (DPT), PLUS --
2. KNOWLEDGE-DISCOVERY/ ANALYTICAL TOOLS
3. VISUALIZATION TOOLS
4. M&S SYSTEM FOR SATI

SIMULATION:

5. M&S SYSTEM FOR SATI
6. M&S SYSTEM FOR CMI:
   A. ANALYTIC SIMULATION
   B. TRAINING SIMULATION
7. DATABASES



8. INTERLINK/JWICS CONNECTIVITY

M&S Data & Validation

- DoDD/DoDI 8260:
  - "Analytical Baselines…include scenarios and supporting data used for computer-assisted war games and theater campaign simulations…"
  - "Joint analytical baseline development teams… may employ models and simulations used within the Department of Defense for strategic analyses. Data specifications should focus on the needs of these models and simulations…"
- SECNAVINST 5200.40A:
  - COMONI shall:
    - …Serve as the final DoN validation authority for M&S representations of foreign maritime forces…
    - …Support the validation of models of foreign maritime forces in DoN simulations.

Department of Defense
DIRECTIVE

NUMBER 8260.1
December 2, 2003

SUBJECT: Data Collection, Development, and Management in Support of Strategic Analysis

References: (a) Defense Planning Guidance, "Fiscal Years 2004-2009," May 2002
(b) DoD 8910.1-M, "DoD Procedures for Management of Information Requirements," June 30, 1998

1. PURPOSE

By the authority of the 2002 Defense Planning Guidance (reference (a)), this Directive establishes policy and assigns responsibility to generate, collect, develop, maintain, and disseminate data on current and future U.S. and non-U.S. forces in support of strategic analyses conducted by the Department of Defense.

2. APPLICABILITY

This Directive applies to the Office of the Secretary of Defense, the Military

DEPARTMENT OF THE NAVY

SECNAVINST 5200.40
N6M
19 April 1999

SECNAV INSTRUCTION 5200.40

From: Secretary of the Navy

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Encl: (1) VV&A Process
(2) Definitions

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(b) DoD Directive 5000.61 of 29 Apr 96; Subj: DoD Modeling and Simulation (M&S) Verification, Validation, and Accreditation (VV&A) (NOTAL)
(c) SECNAVINST 5200.38 of 18 Oct 94; Subj: Department of the Navy Modeling and Simulation Program
(d) SECNAVINST 5000.2B of 6 Dec 96; Subj: Implementation of Mandatory Procedures for Major and Non-Major Defense Acquisition Programs and Major and Non-Major Information Technology Acquisition Programs (NOTAL)
(e) Department of Defense Verification, Validation, and Accreditation (VV&A) Recommended Practices Guide, of Nov 96 (NOTAL)

1. Purpose. To establish policy and procedures and assign responsibilities for modeling and simulation' (M&S) verification, validation, and accreditation (VV&A) requirements within the Department of the Navy (DON).

2. Background

a. For many years, M&S techniques and tools have been used to assist developers and decision-makers throughout the weapons

Office of Naval Intelligence

Questions?
Suggestions?...

Requirements??